CLAIMS

What is claimed is:

1.   A system for the optimization of data transfer in a portable spinning media device, the system comprising:

a housing to house electronic circuitry;

a circuit board within the housing;

a battery power supply to provide electrical power to the circuitry;

a buffer to temporarily store digital data, the buffer having a predetermined total capacity and a current capacity based on an amount of the total capacity currently being used to store digital data;

a CODEC to receive digital data from the buffer and to convert the digital data to audio data;

a spinning storage device, comprising a controllable motor and a data sensor capable of reading digital data from a storage media mounted on the spinning storage device;

a processor to determine a time interval required for data transfer from the spinning storage media to the buffer to permit the continuous flow of digital data to the CODEC, the processor determining the time interval based on at least one transfer criteria selected from a list of criteria comprising a start-up time associated with a time required for the controllable motor to begin spinning at reach operational speed and the current capacity of the buffer, the processor further determining a point in time at which to initiate data transfer from the spinning storage media to the buffer and generating a control signal to initiate operation of the motor for the predetermined time interval and to thereafter eliminate the control signal to thereby cause the motor to cease operation; and

an audio amplifier having an amplifier input coupled to the CODEC to receive the audio data therefrom, the audio amplifier further having an output and providing amplified analog signals to the output for connection to an audio output device.

2.   A system for the optimization of data transfer in a battery-powered spinning media device, the system comprising:

a buffer to temporarily store digital data, the buffer having a predetermined total capacity and a current capacity based on an amount of the total capacity currently being used to store digital data;

a spinning storage device, comprising a controllable motor and a data sensor capable of reading digital data from a storage media mounted on the spinning storage device; and

a processor to determine a time interval required for data transfer from the spinning storage media to the buffer, the processor determining the time interval based on at least one transfer criteria selected from a list of criteria comprising a start-up time associated with a time required for the controllable motor to begin spinning at reach operational speed and the current capacity of the buffer, the processor further determining a point in time at which to initiate data transfer from the spinning storage media to the buffer and generating a control signal to initiate operation of the motor for the predetermined time interval and to thereafter eliminate the control signal to thereby cause the motor to cease operation.

3.   The system of claim 2, further comprising:

a CODEC to receive digital data from the buffer and to convert the digital data to audio data; and

an audio amplifier having an amplifier input coupled to the CODEC to receive the audio data therefrom, the audio amplifier further having an output and providing amplified analog signals to the output for connection to an audio output device.

4.   The system of claim 2, further comprising an input interface to receive additional digital data.

5. The system of claim 4 wherein the input interface comprises a universal serial bus interface.

6. The system of claim 2, further comprising an input device operable by the user to enter instructions.

7. A system for the optimization of data transfer in a battery-powered spinning media device, the system comprising:

a spinning storage device, comprising a controllable motor and a data sensor capable of a digital data file from a storage media mounted on the spinning storage device;

a buffer to temporarily store portions of the data file, the buffer having a predetermined capacity;

a CODEC coupled to the buffer to receive data therefrom, the CODEC processing the digital data at a predetermined data rate; and

a processor to control transfer of the data file portions from the storage media to the buffer, the processor determining a transfer initiation time based on a start-up time associated with the controllable motor, a data transfer rate indicative of a rate of data transfer from the storage media to the buffer and an amount of free space available in the buffer, the processor further determining a time interval required for data transfer from the spinning storage media to the buffer and generating a control signal to initiate operation of the motor for the predetermined time interval and to thereafter eliminate the control signal to thereby cause the motor to cease operation.

8. The system of claim 7 wherein the data file portions transferred from the storage media to the buffer are identical in size.

9. The system of claim 7 wherein the processor further determines the transfer initiation time based on the predetermined data rate of the CODEC.

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10.   The system of claim 7, further comprising a plurality of buffers to store data file portions received from the storage media, wherein the processor further determines the transfer initiation time based on the number of buffers.

11.   The system of claim 7, further comprising a data indicator indicative of a location in the buffer currently being transferred to the CODEC, the processor determining the transfer initiation time based on a location in the buffer indicated by the indicator.

12.   The system of claim 7, further comprising a data indicator indicative of a location in the buffer currently being transferred to the CODEC wherein the processor reserves a portion of the buffer having locations immediately preceding the indicator so that data transferred from the storage media is not transferred into the reserved buffer portion.

13.   The system of claim 12, further comprising an input device operable by a user to initiate a rewind operation, the processor altering the indicator to indicate a location in the reserved portion of the buffer containing data file portions that were previously transferred to the CODEC.

14.   The system of claim 13 wherein the rewind operation requires the alteration of the indicator to indicate a location preceding the reserved portion of the buffer, the processor immediately generating the control signal to initiate operation of the motor for a time interval required only to transfer data to the buffer to backfill the buffer from the location preceding the reserved portion to a starting location of the reserved portion of the buffer and to thereafter eliminate the control signal to thereby cause the motor to cease operation

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15.   The system of claim 7, further comprising a data indicator indicative of a location in the buffer currently being transferred to the CODEC and an input device operable by a user to initiate a fast forward operation requiring the transfer of data to the CODEC from a location in the data file subsequent to the location indicated by the indicator, the processor altering the indicator to indicate the location in the data file to be transferred to the CODEC.

16.   The system of claim 15 wherein the fast forward operation requires the alteration of the indicator to indicate a location in the data file at a point subsequent to the data file portions stored in the buffer, the processor immediately generating the control signal to initiate operation of the motor for a time interval required to transfer data file portions to the buffer to fill the buffer from the location indicated by the altered indicator and to thereafter eliminate the control signal to thereby cause the motor to cease operation

17.   The system of claim 15 wherein the processor reserves a portion of the buffer having locations immediately preceding the altered indicator so that data transferred from the storage media is not transferred into the reserved buffer portion.

18.   A method for the optimization of data transfer in a battery-powered spinning media device, the method comprising:

activating a spinning storage device, comprising a controllable motor and a data sensor capable of a digital data file from a storage media mounted on the spinning storage device;

temporarily storing portions of the data file in a buffer, the buffer having a predetermined capacity;

transferring data from the buffer to a CODEC, the CODEC processing the digital data at a predetermined data rate; and

controlling transfer of the data file portions from the storage media to the buffer by determining a transfer initiation time based on a start-up time associated with the controllable motor, a data transfer rate indicative of a rate of data transfer from the storage media to the buffer and an amount of free space available in the buffer, determining a time interval required for data transfer from the spinning storage media to the buffer, generating a control signal to initiate operation of the motor for the predetermined time interval and eliminating the control signal to thereby cause the motor to cease operation.

19. The method of claim 18 wherein the data file portions transferred from the storage media to the buffer are identical in size.

20. The method of claim 18 wherein the processor further determines the transfer initiation time based on the predetermined data rate of the CODEC.

21. The method of claim 18, further comprising using a data indicator to indicate a location in the buffer currently being transferred to the CODEC and determining the transfer initiation time based on a location in the buffer indicated by the indicator.

22. The method of claim 18, further comprising using a data indicator indicative of a location in the buffer currently being transferred to the CODEC and reserving a portion of the buffer having locations immediately preceding the indicator so that data transferred from the storage media is not transferred into the reserved buffer portion.

23. The method of claim 22, further comprising sensing operation of an input device to initiate a rewind operation and altering the indicator to indicate a location

in the reserved portion of the buffer containing data file portions that were previously transferred to the CODEC.

24.   The method of claim 23 wherein the rewind operation requires the alteration of the indicator to indicate a location preceding the reserved portion of the buffer, the method further comprising immediately generating the control signal to initiate operation of the motor for a time interval required only to transfer data to the buffer to backfill the buffer from the location preceding the reserved portion to a starting location of the reserved portion of the buffer and to thereafter eliminate the control signal to thereby cause the motor to cease operation

25.   The method of claim 18, further comprising using a data indicator indicative of a location in the buffer currently being transferred to the CODEC and sensing operation of an input device to initiate a fast forward operation requiring the transfer of data to the CODEC from a location in the data file subsequent to the location indicated by the indicator and altering the indicator to indicate the location in the data file to be transferred to the CODEC.

26.   The method of claim 25 wherein the fast forward operation requires the alteration of the indicator to indicate a location in the data file at a point subsequent to the data file portions stored in the buffer, the method further comprising immediately generating the control signal to initiate operation of the motor for a time interval required to transfer data file portions to the buffer to fill the buffer from the location indicated by the altered indicator and to thereafter eliminate the control signal to thereby cause the motor to cease operation

27.   The method of claim 25, further comprising reserving a portion of the buffer having locations immediately preceding the altered indicator so that data transferred from the storage media is not transferred into the reserved buffer portion.

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